GE Energy
Measurement & Control Solutions

Mark* VIe Control
Migration from Mark V Control

fact sheet

You can now elegantly modernize your legacy Mark V control system to GE's most advanced control platform, the Mark VIe, through a simple plug-and-play exchange of the electronic modules. With no change to site wiring, panel terminations, turbine field devices, or panel size, the migration significantly expands your system's capabilities while completely addressing all obsolescence issues. The solution ensures continued OEM support and the ability to grow and do more with your control system. It is designed to replace all Mark V control systems, except for those on LM (aeroderivative) turbines.

Benefits of Migrating Your Mark V to Mark VIe

- A complete control upgrade with reduced scope, risk, site disruption, cycle, and cost, installed in as few as five outage days
- Reset the clock on life cycle support – ensure availability of spare parts and OEM engineering support
- Increase turbine performance – substantially increased computer power and easily expandable I/O with many new types, enables incorporation of GE's many advanced turbine offerings such as Autotune, Turndown, Cooling Optimization, TILs, advance DLN, and more
- Increased reliability and availability through:
  - Increased communications availability: eliminates single-point communication failures within the control and provides options for cost-effective network redundancy between controls and HMIs
  - Increased electrical surge and noise immunity
  - Reduced time and effort to replace cards online with auto configuration
  - Card diagnostic LEDs replaced with HMI diagnostics
  - Advanced diagnostic/trending software tools with 1ms SOE on all discrete I/O, configurable before and after commissioning on a point by point basis, with no rewiring
  - Ability to incorporate proactive diagnostic devices and tools with the easily expandable I/O
  - Identify false open contact readings through optional open wire detection for both cabinet and field wiring
  - Available optional pluggable terminations on terminal boards
- Lower cost of ownership and maintenance with:
  - Backward compatibility of many existing Mark V controller spares
  - Single, powerful, easy-to-use software tool for plant operation, maintenance, diagnostics, and configuration of HMI application, networks, processors, and I/O boards
  - Replacement of proprietary maintenance software, GUI, and networks with easy-to-use industry standards
  - Elimination of jumpers and pluggable PROMs

New Technology

The Mark VIe platform offers many new features and capabilities, enhanced reliability, and greater availability. It also enables incorporation of many advanced control and turbine operability enhancements, such as the GE Suite of OpFlex offerings, TILs, and advanced Dry Low NOx. Existing Mark V processors are replaced with state-of-the-art Mark VIe processors, substantially increasing computational power. The ARCNET* communication is upgraded to redundant 100 MB Ethernet® for both the I/O network and external communications, while maintaining the ARCNET communication to the EX2000 where applicable. New operator stations communicate directly to the redundant controllers <R> <S> <T>, not through the Mark V <C> module, eliminating a single point failure and the need for a backup display.

The new network provides high speed, peer-to-peer communications among other Mark control systems and the ability to add redundant networks without requiring a Mark V gateway module <D> in the system.

For sites with EX2000 generator excitation systems, an ARCNET-to-Ethernet gateway is provided, or the control section of the exciter can be upgraded with a new Digital Front End (DFE) using the EX2100e platform. This upgrade allows seamless integration with the same ControlST software configuration, diagnostics tool, and networks as your new Mark VIe system.

Operator and Maintenance Software

Existing operator and maintenance stations are replaced with GE's current Proficy* HMI/SCADA CIMPLICITY* graphics system with improved graphics, screen navigation, alarm/event management, and trending tools. If you have an original <I> station, this also gives you a Windows* operating system with modern client/server networking capability. GE still supports your existing Modbus® and TCP/IP GSM links to plant controls, and complements these with OPC and HMI Client-to-PI server interfaces.

GE uses proven automation tools, ensuring that your existing application software, with its tens of thousands of attributes, is accurately translated to a modern 32-bit floating-point data format. All I/O scaling, alarms, and point names are retained. This new software environment is part of the ControlST software suite.

It offers major enhancements and a focus on ease-of-use over your current tools, including drag-and-drop type editors, math blocks, macros, trending with video-type forward/reverse/freeze capability, watch windows, code-compare tools, etc. Also, changes can be downloaded online without rebooting the new controllers.

I/O Interface

The elegance of the modernization is that the Mark VIe control system maintains the existing cabinet, high density of I/O, all cabinet and field terminations, and turbine devices, with no update to site drawings required. This is the key to reducing outage time from weeks to a few days.

Your new Mark VIe provides complete flexibility to add and distribute additional Mark VIe I/O as needed. Additional flexibility is gained though the diverse number of Mark VIe I/O types available, which continues to grow. Mark VIe I/O supports a variety of busses, including HART*, PROFIBUS-DP, and FOUNDATION Fieldbus.

GE also offers:

- Ribbon Cable Replacement Service Option
- Upgraded terminal boards with:
  - Optional pluggable terminations to ease maintenance
  - Increased protection from voltage spikes, including those caused by lightning
  - Both field and ribbon cable open-circuit detection on all digital I/O

Above all, migration of your Mark V control system to the Mark VIe platform gives you a clear path for future enhancements and life cycle support.

For more information, please contact your nearest GE Sales or Service office, or an authorized GE Sales representative.

*ARCNET is a registered trademark of Datapoint Corporation.
*Ethernet is a registered trademark of Xerox Corporation.
*HART is a registered trademark of HART Communication Foundation.
*Modbus is a registered trademark of Schneider Automation.
*Windows is a trademark of Microsoft Corporation.
*Mark, ControlST, CIMPLICITY, and Proficy are trademarks of the General Electric Company.

Copyright © 2010 General Electric Company. All rights reserved.

GEA18405 (10/2010)